

REMARKS**Introduction**

Claims 1-8 are pending, of which claims 1 is independent. Claims 6-8 have been withdrawn. Favorable reconsideration of the application in light of the following comments is respectfully solicited.

Applicants respectfully note that in the previous Response filed on February 17, 2010 in response to the Office Action dated December 1, 2009, there was no amendment made. Thus, the indication of items 3 and 7 in the Advisory Action dated February 23, 2010 is erroneous.

Claim Rejection – 35 U.S.C. § 103

Claims 1-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Otani et al. (JP62083444). This rejection is traversed for at least the following reasons.

In response to February 17, 2010 Response, the Examiner asserts that Otani teaches the grain size of the alloy to be less than 50 microns, which broadly encompasses the claimed range. Applicants disagree.

As Applicants have already argued, the reference JP11-226723, which was submitted with October 14, 2009 IDS, clearly teaches that in order to achieve the object of Otani for effectively increasing the wear resistance of the aluminum alloy, the grain size of silicon has to be at least 7 μm (see, paragraph [0004] of the English translation of JP'723). Furthermore, paragraph [0002] of JP '723 also disclose as follows:

“The entire molten alloy, including the primary Si grains, becomes extremely fine in structure. While such fine structure improves workability and mechanical strength, such fine structure tends to reduce wear resistance. In order to ensure high wear resistance of the hypereutectic aluminum-Si alloy, it is necessary to disperse primary Si grains having a suitable grain size with sufficient density.”

Based on these description, a person of ordinary skill in the art would understand that the term “suitable” as used in paragraph [0002] means “7-15 μm ” as used in paragraph [0004], and thus would recognize that in order to “ensure high wear resistance of the alloy,” the grain size of Si has to be at least 7 μm (see, also paragraph [0007] of the English translation of JP ‘723).

Further, Applicants are submitting JP5-78770A and JP8-49035 with English translations thereof for the Examiner’s review. Paragraph [0026] of JP’770 discloses as follows:

“Particle diameter of primary Si: In order to ensure wear resistance, cutting properties, and castability, the average particle diameter of primary Si has to be adjusted to 10 to 50 micrometers. If the average particle diameter is less than 10 micrometers, the primary Si cannot sufficiently improve the wear resistance of the alloy.”

Paragraph [0006] of JP’035 discloses as follows:

“.... the average particle diameter of primary Si is determined to be 10 to 40 micrometers because if its average particle diameter is less than 10 micrometers, it is impossible to ensure desired excellent wear resistance.”

Thus, it is clear that these references, together with JP ‘723, support the fact that in order to achieve the object of Otani, i.e., sufficiently increasing the wear resistance of the alloy, the average particle diameter of primary Si has to be larger than 7 μm , which is much larger than the claimed range of 4 μm or less.

As set forth above, it is general knowledge at the time of filing that the larger size of silicon is preferable for higher strength and it is practically impossible to achieve desired strength of the aluminum alloy without sacrificing the heat resistance. As such, it is clear that although the Examiner asserts that Otani teaches the size of less than 50 μm , Otani and the level of the technology at the time of filing require that the size is more than 7 μm .

Based on the foregoing, Applicants respectfully submit that Otani does not render claim 1 or any claims dependent thereon obvious. Accordingly, claims 1-5 are patentable over Otani. Thus, it is requested that the rejection of claims 1-5 be withdrawn.

Conclusion

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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